

Penn Cambria Curriculum

Course Name	Basic Programming
Length of Course	.5 credit / 1 day per week for one quarter
Grade Level	9-12
Prerequisites	None
Course Description	This course is designed to meet the needs of all students, not just those interested in computer careers. Prior knowledge of programming languages is not necessary. Students will create interactive stories, animations and games using graphical programming languages such as Scratch and Logo.
Units of Study	Learning Logo Learning Scratch
Materials	Text: N/A Supplemental Materials: Internet connection, Notepad

Standard Alignment:

PA Academic Standards for Business, Computer and Information Technology(2012)

15.4.12. H – Use programming languages to develop logical thinking and problem solving skills.

15.4.12. I - Compare and contrast programming languages; select most appropriate one to complete a specific task.

PA Academic Standards for Reading and Writing in Science and Technology (draft 8/6/12)

CC.3.5.11-12. C – Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CC.3.5.11-12. D – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

CC.3.5.11-12. G – Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

CC.3.6.11-12. I – Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Unit: Learning Logo

Estimated Time: 15-20 days

Curricular Objectives:

- Create code to make the Logo turtle move forward, backward, left, and right
- Create code to manipulate the pen used to create lines, such as picking it up and changing its color
- Learn to load programs in Logo
- Learn to use EdAll
- Create code to make the turtle repeat commands
- Create code that makes new commands called procedures
- Create code that allows you to input numbers with the procedure name so that you can change certain parameters of the code
- Create music using player.lgo file.
- Create code that randomly generates a number and apply it to a program
- Create code that uses an “if” statement to generate a true or false answer
- Create code that makes variables.
- Create code that uses a ForLoop statement to generate movement.

Assessments/ Measurement of Objectives:

Classroom activities based on objectives

Student created projects

Suggested Methods of Instruction / Learning Activities:

Practice exercises

Create code to duplicate objects

Direct instruction

Reading and Writing to Learn activities

Unit: Learning Scratch

Estimated Time: 25-30 days

Curricular Objectives:

- Demonstrate how to make a sprite move
- Demonstrate how to add sound to a project
- Demonstrate the proper use of the repeat and forever commands
- Demonstrate how to use the “Green Flag” command
- Demonstrate how to make a sprite change color
- Demonstrate how to use the keyboard keys to control actions in a project
- Demonstrate how to create your own sprite
- Demonstrate how to add speaking balloons and thought bubbles to sprites
- Demonstrate how to turn and point a sprite in a predetermined direction
- Demonstrate how to change the position of a sprite using x and y coordinates
- Demonstrate how to change sprite costumes and stage backgrounds
- Demonstrate how to use the pen feature to draw on the stage
- Apply simultaneous controls to multiple sprites
- Demonstrate how to broadcast commands from one sprite to another
- Demonstrate the proper use of “if” statements when creating conditional actions
- Demonstrate the use of touching and distance to initiate action
- Create variables to use in programming a sprite
- Create a timer
- Demonstrate proper use of logical operators

Assessments/ Measurement of Objectives:

Classroom activities based on objectives

Student created projects

Suggested Methods of Instruction / Learning Activities:

Practice exercises

Create code to duplicate objects

Direct instruction

Reading and Writing to Learn activities